

WHAT IS CLAIMED IS:

1. An optical disc drive to be loaded with an optical disc that includes tracks on which a plurality of marks are formed, the optical disc drive comprising:

an optical system for focusing a light beam on the optical disc loaded;

a photodetector, which includes multiple areas to receive the light beam that has been reflected from the optical disc and which generates multiple read signals representing quantities of light received at the areas;

a filter, which receives the read signals and which outputs multiple processed signals with one of frequency components of the read signals attenuated, the frequency component to be attenuated being determined by the lengths of the marks;

a phase difference detecting section for detecting a phase difference between the processed signals;

a signal generating section for generating a tracking error signal, representing a positional relationship between a focal point of the light beam on the optical disc and a target one of the tracks, based on the phase difference; and

a control section for generating a control signal based on the tracking error signal,

wherein in accordance with the control signal, the

optical disc drive controls the focal point of the light beam across the tracks on the optical disc.

2. The optical disc drive of claim 1, wherein the optical system includes:

a light source, which emits the light beam;

a lens, which focuses the light beam on the optical disc;

and

an actuator, which adjusts a position of the lens, and

wherein in response to the control signal, the optical disc drive drives the actuator to adjust the position of the lens such that the focal point of the light beam is located on the center of the target track.

3. The optical disc drive according to claim 2, wherein the filter removes the frequency component.

4. The optical disc drive according to claim 2, wherein the filter removes a frequency component of a particular frequency that is determined by the minimum length of the marks.

5. The optical disc drive according to claim 4, wherein the filter removes frequency components of which the frequencies are equal to or higher than the particular

frequency.

6. The optical disc drive according to claim 4, wherein the filter further removes a frequency component of a frequency that corresponds to a mark of a second shortest length.

7. The optical disc drive according to claim 1, wherein the optical disc drive determines the frequency by a linear velocity of the track and the length of the mark at the focal point of the light beam, and

wherein the filter attenuates the frequency component of the determined frequency.

8. A tracking control method comprising steps of:

focusing a light beam on an optical disc that includes tracks on which a plurality of marks are formed;

receiving the light beam, reflected from the optical disc, at multiple areas;

generating multiple read signals representing quantities of light received at the areas;

receiving the read signals and outputting multiple processed signals with one of frequency components of the read signals attenuated, the frequency component to be attenuated being determined by the lengths of the marks;

detecting a phase difference between the processed signals;

generating a tracking error signal, representing a positional relationship between a focal point of the light beam on the optical disc and a target one of the tracks, based on the phase difference;

generating a control signal based on the tracking error signal: and

controlling the focal point of the light beam across the tracks on the optical disc in accordance with the control signal.

9. A computer program product for use with an optical disc drive for tracking control purposes, the optical disc drive to be loaded with an optical disc that includes tracks on which a plurality of marks are formed,

wherein the computer program product causes the optical disc drive to perform steps of:

focusing a light beam on the optical disc loaded;

receiving the light beam, reflected from the optical disc, at multiple areas;

generating multiple read signals representing quantities of light received at the areas;

receiving the read signals and outputting multiple processed signals with one of frequency components of the read

signals attenuated, the frequency component to be attenuated being determined by the lengths of the marks;

detecting a phase difference between the processed signals;

generating a tracking error signal, representing a positional relationship between a focal point of the light beam on the optical disc and a target one of the tracks, based on the phase difference;

generating a control signal based on the tracking error signal; and

controlling the focal point of the light beam across the tracks on the optical disc in accordance with the control signal.

10. A chip circuit for use in an optical disc drive, the optical disc drive having:

an optical system for focusing a light beam on an optical disc that includes tracks on which a plurality of marks are formed; and

a photodetector, which includes multiple areas to receive the light beam that has been reflected from the optical disc and which generates multiple read signals representing quantities of light received at the areas,

the optical disc drive controlling a focal point of the light beam across the tracks on the optical disc in accordance

with a control signal,

wherein the chip circuit comprises:

a filter, which receives the read signals and which outputs multiple processed signals with one of frequency components of the read signals attenuated, the frequency component to be attenuated being determined by the lengths of the marks;

a phase difference detecting section for detecting a phase difference between the processed signals;

a signal generating section for generating a tracking error signal, representing a positional relationship between the focal point of the light beam on the optical disc and a target one of the tracks, based on the phase difference; and

a control section for generating the control signal based on the tracking error signal.